

THE
SOUTHERN AGRICULTURIST.

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PART I.

ORIGINAL CORRESPONDENCE.

ART. I.—*An Essay on the Culture of the Grape Vine, and the making of Wine; suited for the United States, and more particularly for the Southern States.* By N. HERBEMONT, of Columbia, S. C.

“And Noah began to be an husbandman, and he planted a vineyard.”—
GENESIS C. IX. V. 20.

(Continued from page 57.)

Of the Cuttings.

Vine cuttings ought to be about two feet long, a little more or a little less, according to circumstances. The wood of the preceding summer's growth, is the only part of the Vine suitable to this purpose. It is, however, to have, when convenient, about one inch or two of the wood of the preceding year; but this is by no means essential. Some branches are sufficiently long and well matured, to make two or three cuttings; but the first, that is to say, that part which comes nearest the old wood, is considered the best. This, however, depends on the complete maturity of the wood. As the roots are cut chiefly from the buds or joints, it is best that the lower end of the cutting be cut straight across and close below a bud or joint; but the upper end ought to be cut sloping at least half an inch above the upper bud. Although not absolutely necessary in this case, it would be well for the cultivator to accustom himself, when he prunes, to cut with an upwards stroke, and a slope

turned on the opposite side of the bud; because the bleeding of the Vine may, when this is not attended to, injure the bud by covering it with water and gum, which will expose it to the frost or prevent its free expansion. In planting a cutting, be sure that the upper bud is a sound one; and if it be not, cut it down to one that is good. It is better to have a cutting somewhat short, with a good bud, than a long one with an unsound one at top. The largest shoots do not always make the best cuttings. When one has a choice, he ought to select such shoots as are round, ripe and sound, and accurately short jointed.

I have, hitherto, only noticed the planting of cuttings. I shall now give brief instructions for the planting of rooted plants, obtained either from cuttings planted in a nursery, one, two, or three years previously, or from layers.

The ground having been well prepared as stated above, have holes made sufficiently large, that the roots may be extended at full length, and as evenly as possible, putting the earth first to the lower tier of roots, filling well the interstices; then go on to the next tier, and so on till the whole is done, pressing the earth very gently, but sufficiently to make it touch every part of the roots. Leave only one or two buds above the ground, according to the strength of the plant, the freshness and abundance of the roots. It is much the best, that plants be planted immediately after taking them up; but if this be impracticable, it is necessary to cover the roots with earth, moss, straw, or any thing else that will keep them from drying. In digging up Vines to plant, care ought to be taken to have all the roots entire; and, if any of them are torn, broken, or any way lacerated, they ought to be cut off smooth, as also all such parts as may be unsound. When Vines are planted with these precautions, they will suffer but little by the removal, and frequently bear fruit the first year.

I do not think it advisable to plant Vines that are more than four or five years old. These very seldom make good Vines, and cuttings are much to be preferred to such.

Of the Care and Culture necessary for a Vineyard, during the two first years.

There is but little work necessary for the two first years, to young Vines. In the autumn, as soon as practicable, the Vineyard ought to get a good deep working, so as to bury

all the leaves, grass, weeds, and trash which may be on the surface. The ground must be kept loose and clear of grass and weeds during the spring and summer, by means of the plough and hoe, or the spade, which does the best work of all the instruments used for stirring or cultivating the ground, in the fall or winter, or whenever the first working of the ground is performed; for the summer weeding ought to be done very shallow. Whichever of these is used, great care must be taken lest the roots or stems of the plants receive any injury.

As the plant shoots up, it is generally best to suffer only one shoot to grow on a Vine, and, if any are taken off with this view, it ought to be done when they are very young, and can be pinched off. Although it is generally recommended never to use the knife, to cut the green tender shoots of the Vine, or other cultivated trees—as I never could see any inconvenience from the use of it, and can perceive no good reason for this, and no author, that I know of, has given any—I take the liberty of breaking through the rule, and use a knife; or rather, which is more convenient, a pair of sharp scissors; although my nails may be sufficient to perform the operation. A very sharp instrument makes a much smoother wound than the nails, and it is therefore easier healed, and this must be a very great advantage. If I have almost all the writers against me in this case, who have given the rule without a reason for it, I have, on my side, common sense, with the advice and experience of the celebrated Abbé Rosier. If the operation of cutting or pinching off the superfluous shoots has been neglected, while they were quite small and tender, it is, perhaps, better not to do it at all, than to cut off wood actually growing, and already hard, which makes a wound difficult to heal, particularly in very young Vines. During the first year, however, the propriety of performing this operation is very problematical, and I would therefore advise to perform it discreetly, if at all; cutting only such parts as are much misplaced, and may injure or retard the growth of the principal shoot, by drawing the sap to themselves. This principal shoot is best left to grow as it pleases, without suppressing any of the side shoots or interleaves.* If the

* *Interleaves.* I give the preference to this name, instead of side shoots, nephews, suckers, &c. because it expresses more clearly what it is. It

cultivator has leisure, it is best to tie up this shoot to the stake with some soft matter, such as matting, bull-rush, rye or rice straw, well soaked in water, to render it pliant. In doing this, care must be taken that the leaves be not tied with the straw, or in any manner injured. Keep in mind always, that plants are fed by means of their leaves as well as by their roots, and that vine cuttings have no roots; and that, therefore, their chief dependence, at first, particularly, is on their leaves. Although the tying up of the young shoots for the first year, or even for the second, is not of absolute necessity, it is well to do it; first, a shoot tied up grows stronger, the main shoot ought to be thus induced to attract the sap—secondly, that the shoot may not lie on the ground and be continually exposed to be trampled upon, or cut or bruised with the hoe, &c.

It has been stated before, that it is best not to prune Vines the first winter after planting, unless they are very strong, and this with a view to bring them more on an equality with the weaker ones which are not to be pruned. This view or object may not be of sufficient importance to induce the pruning of the strong ones; and I am informed, that it is becoming now the fashion, to recommend not to prune at all the first, or even the second year. This may be right; but fashions are not to be adopted, merely because they are such; but because they are founded on sound reason and that advantages are to be derived from them. I have no objection to admit, that my reason for pruning the most vigorous Vines the first year, may be insufficient to induce its being done. Of this, every man is to judge for himself; but I see no very sufficient reason for extending this indulgence to the second year. The objections I have to it are, first, that the Vines must grow too bushy, and that the first pruning being the third year must be too severe:—secondly, that by this method, I presume the Vines will not bear the third year, which, though no great disadvantage, does not suit our anxiety to enjoy the fruits of our labour as soon as possible. This method has, however, the advantage of having but little work to do the two first years; for I presume those who recommend it, do not insist on cut-

means the small shoots which grow at the sides of the principal ones, just above each leaf, and between the latter and the bud intended for the following year's growth.

ting off the upper roots, which are technically called daylight roots.

As I have mentioned these, I may as well express my opinion of this apparently very strange practice, which is also strongly insisted upon both by the theoretical and practical writers I remember having read, with the exception of one, and that is the same Abbé Rosier, noticed before, and his authority is of considerable weight.

In the production of these roots, nature has certainly some important object in view, and it ill becomes presumptuous man to oppose her so violently, as to suppress totally, parts which she invariably produces and re-produces, after they have been cut off. This must not be done without some very strong reasons, which it is proper for us to examine carefully and impartially. The reasons given by the advocates of the practice, are :—that when these roots are suffered to remain, they are exposed to be cut and torn by the plough, hoe, &c. by which the plant is very much injured, and much sap suffered to be lost. Also that in hot and dry weather, these roots on which the Vines are made in a great measure to depend, are dried up and scorched by the heat and drought, which causes the premature fall of the leaves, and the rotting of the fruit; that, by cutting them off to at least within six inches of the surface, the lower roots are induced to grow, to acquire strength, and to extend deeper in the soil, where they always find moisture and nourishment for the support of the plant. All this is very plausible, and may be true; but let us examine the Abbé Rosier's objections to it. He says, 'The Vine is a vivacious plant, which, under a proper system of culture, is capable of prospering in the same spot, during a great number of years. It is scarcely out of its infancy, that all the fine roots which grow from the stem just below the surface of the soil, and extend in every direction, but to a very inconsiderable depth, on all the extent of the ground destined for it. The roots which proceed from the lower part, penetrate deeper into the ground; the instruments of the cultivator cannot reach them; but they contribute much less than the former to the nutriment of the plant, because these are effected by the light, and they find within their reach the alimentary substances which the air deposits at the surface of the soil. Proprietors, therefore, ought to proscribe every where, the practice that obtains in most

‘countries of *shaving* the Vines; that is to say, to scrape
‘with a sharp instrument the part of the stem below the sur-
‘face, in order to detach from it all these precious filaments
‘which are treated as suckers or parasites; whilst they are
‘the first means employed by nature, to produce vegetation,
‘and that they ought to be considered as the organs the
‘most useful to the plant. Not only is it absurd to cut
‘them off, but we ought also to know, that they ought
‘neither to be frequently uncovered, nor continually tor-
‘mented or disturbed in their functions. As great incon-
‘veniences may result from too much cultivation, as from
‘cultivation at an improper time, and at certain periods of
‘vegetation, and during, or immediately after certain un-
‘favorable states of the weather. People are sometimes
‘surprised, that a Vine young and vigorous, falls suddenly
‘into a state of langour. They see its leaves turn yellow,
‘and hang down, and the increase of the grapes is arrested;
‘they attribute all this evil to bad winds, which have not
‘blown—to insects, which have not appeared—to the pri-
‘vation of manures, of which the Vine had no need:—the
‘cultivator is alarmed; he sees the cause of the evil every
‘where, where it does not exist; for it is most generally the
‘effect of work performed improperly, or at an unsuitable
‘time.” Or, perhaps, never done at all.

These are strong denunciations of the practice alluded to, and they deserve some attention.

Vines, in their native state, are found in the woods; the ground is shaded by trees and bushes, besides being covered with the decayed leaves of several years growth. This, of course, prevents the ardor of the sun from doing any injury to the superficial roots. These find abundant food in this decayed and decaying vegetable matter of the surface for the plant, which has the less need of the moisture and nourishment purveyed for it by the deeper roots. Now, if our cultivated Vines are similarly situated, the question is settled, and the day-light roots must not be cut off. This, however, is not the case. The ground of our Vineyards is not, and ought not to be shaded, except by the Vines themselves; the soil is often ploughed, or otherwise stirred up; no detritus of trees, bushes, &c. is allowed to remain on the ground, to retain the moisture, and add vegetable food on the surface; on the contrary, such food, when it is supplied in the shape of manures, fresh earth, &c. is always

ploughed in, or otherwise worked into the interior of the soil. Still the action of the air, light and heat fertilizes the surface, and these troublesome roots run into it, and will continue to do so for years, although they be cut off every fall, which is generally the season for performing this operation. After a time, it is true, they cease to grow, and if the ground has been well prepared for the planting of the Vines, it may not suffer much from the privation of these apparently essential roots. The solution of the difficulty may lie here. If the ground has not been well prepared by deep trenching, as above recommended to be done, and an abundance of vegetable matter placed at a suitable distance from the surface, it appears to me vain to expect, that the lower roots will be attracted deeply enough, so as to resist the great heat and drought of our summers, and find a sufficiency of food for the liberal supply of the plant, without availing itself of the surface vegetable matter, by means of its upper roots. If, therefore, in this case, the upper or day-light roots are cut off, the plant must suffer. If, on the other hand, a quantity of vegetable matter has been duly deposited to the depth of two, three, or even four feet from the surface, it appears reasonable to suppose, that the roots will be attracted to it, and find, besides the food it will supply, an abundance of moisture, for all the purposes required. In this case, therefore, the day-light roots may be cut off without injury, if it can ever be done, which is doubtful yet. It only remains to consider which is the least evil of the two; viz. the cutting of these roots, (when, according to the above reasoning, it may be done,) in the fall or winter, when vegetation is at a stand, and these amputations may be done with the least injury; or the suffering them to remain and run the risk of being cut, torn off and lacerated by the plough, hoe, or spade, in the summer. During this season, the Vine has its most important functions to perform, and it must not be disturbed with impunity, during the time of the performance.

The conclusion would then seem to be, that when the Vine has not been planted according to the most approved method, the operation of cutting away the day-light roots is a dangerous one, or, at least, of very questionable propriety; but, that when it has been planted *secundum artem*. it may be done, not only without injury, but with probable advantage.

I have never performed it myself, on my Vines; for the first had not been properly planted, and some of the others are only now able to bear the operation, while the latest planted, viz. last winter are too young for it. Some workmen whom I have occasionally employed here, have cut off the upper roots of a few Vines; but as there were but few operated upon, and they were not marked, I have not been able to observe the difference, if any. Add to this, that it has been done but once, and that, several years since; so that I can say nothing as to the effect. I am fully satisfied, however, that some of my Vines have often suffered considerably by the injury done to these superficial roots by the hoe, and also by the great heat and drought of some of our seasons. The oldest Vines are too old, and were too badly planted, to be able to undergo an operation, which would be rendered doubly severe by its not having been performed before; for these roots are now very large, and the Vines would run very great danger in having it now performed. This shows the necessity of beginning any thing we undertake, in the best manner possible; otherwise, the evil is most frequently without a remedy. Let us now return to the pruning.

Many persons, ignorant of the art, and who never have reflected on the subject, say, that pruning the Vines, if not a work of supererogation, that it is at least useless:—that Vines in their native situations, are never pruned, and still bear an abundance of fruit every year:—that Mr. Such-a-one, and a dozen others, had *cultivated our English* grapes in their gardens, which never failed of bearing an abundance of most excellent grapes; and, that after having been pruned, they either ceased to produce fruit at all, or to produce it in their former abundance, &c.

The subject of the cultivation of the Vine, is a thing so new in this country, that it may be worth while to make a few observations on the above objections, which would not otherwise be, perhaps, deserving of notice; for the premises are almost, in every instance, either false, or inaccurately stated. Let us examine them, however, in the order in which they are here presented.

It is not true, that it is useless to prune Vines; for, in this case, the world would have been doing a foolish thing for thousands of years, and that too, at the recommendation of the most celebrated men that we know any thing of in an-

cient times. I shall here notice one instance in the short but pleasing description of the Vine, which *Cicero*, in his beautiful tract on Old Age, puts into the mouth of *Cato* :—

‘ The Vine that naturally runs low, and cannot rear itself without a support, is, for this end, provided with tendrils, by which, like so many hands, it lays hold on every thing it meets with, which may raise it, and by these aids, it expands and become so luxuriant, that to prevent its running out into useless wood, the dresser is obliged to prune off its superfluous wandering branches ; after which, from the standing joints, in the ensuing spring, the little bud called the *Germ*, pushes out the new shoot, whereon the tender young grape is formed ; which, gradually swelling by nourishment from the earth, is at first austere to the taste, but guarded with leaves around, that it may neither want due warmth, nor suffer by too scorching rays ; it ripens by the sun’s enlivening beams, and acquires that delicious sweetness and beautiful form, that equally pleases both the taste and the eye ; and then enriches the world with that noble liquor, the advantages of which I need not name. Yet, is not the sense of these, nor of all the advantages of husbandry, that so nearly affect us, as the pleasure I find in their culture alone, such as ranging the vines and their supporting perches in exact and even rows—in arching and binding their tops, lopping off the woody and barren, and training the fruitful branches to supply every vacancy, and then contemplating the beauty and order, with the process of nature in the whole.’

It is true, that the Vines in their native state, are never pruned designedly ; but they are partially so by the numerous accidents to which they are exposed. Whoever has observed them, must have seen, that every year a considerable portion of a Vine in the woods dies, which is a means nature employs to rid her nursling Vines of superfluous branches ; otherwise, they would have more than they could nourish. It must be so ; for we see so many of them dead in the spring. That so many branches, and frequently whole vines die, must be, because having more than can be supported and well fed, they are exhausted by the quantity of wood, leaves and fruit which they bear. They bear pretty abundantly therefore ; but I have only heard of the excellent fruit found on them. If it be good, it is so only in comparison with the almost totality. They are certainly

much improved by cultivation, as regards size, juciness and taste. This I know by experience.

That an imported Vine planted in a garden, should continue to bear fruit according to its kind, though it is not pruned, is not to be wondered at, though the reverse of this would be; and if it has never been pruned, and otherwise properly cultivated, its fruit must necessarily be very inferior to what it would otherwise be, though it continues to be of the same kind. The effect of injudicious pruning on such a Vine, may be to render it for a few years unproductive. This, however, I have never seen, and if it has ever happened, it was not the effect of the pruning, but rather of its having been too long delayed. In a well cultivated Vine, the young shoots are stout and large; the leaves are large, and the fruit, which is also large, is more juicy, more sightly, and in every respect better, than if the vine had been left to itself. As to quantity of fruit, it may be true, that a Vine unpruned, or one pruned by a timid and unskilled hand, may sometimes bear a greater number of bunches of grapes; but test the quantity by weight, and you will most undoubtedly find, that the Vine which has been properly pruned, has very considerably the advantage. Test it also by the quantity of juice extracted from a given quantity, and you will find nearly one-third more in the pruned Vine, than in that left in the state of nature.

(To be continued.)

ART. II.—*Brief Notes on the Cultivation of Cotton, Rice, Sugar Cane, the Grape Vine, Silk-Worms, and Olives, &c.* by THOMAS SPALDING, of Georgia.

(Continued from page 61.)

Silk-Worms.

Mr. Young, of Savannah, and Mr. M'Cormack, of Bryan County, lately turned their attention to Silk; in both instances, they are highly satisfied with the results. There is no culture that could be possibly introduced, that would be so peculiarly valuable to the country.

It was, as you must know, when Georgia was first colonized, a primary object. But the change of Government, the demand in a new country for provisions, to supply a rising capital in their vicinity; extensive pasturage, and a ready sale for all the product of their labour, drew off the attention of the Dutch and Swiss inhabitants of Ebenazar, and from Purisburgh, from this their first pursuit; to which we may add, some prejudices they derived from France; from which country they appeared to bring all the knowledge they possessed, in rearing of the Silk-Worm, or in producing of Silk.

The white Mulberry resists the cold better than other of the Mulberry family; it is therefore exclusively cultivated in France, while in Spain, better Silk is said to be made from the black Mulberry. At the first settlement of Ebenazar and Purisburgh, the black and red Mulberry plants might have been obtained in the neighbourhood; while the white had to be imported from abroad. The Mulberry grows well from cuttings; the white preferring a clay soil, and the black and the red, sandy loams—and all the secret of preserving the health of the insects, appears to be, to fire, abundant ventilation, and frequent purification by lime, from the mephetic air which is generated by and around the worms. Without great attention to these objects, many of the worms perish, and no occupation can be more unhealthy to the attendants. With this attention to air and lime, the worms live, and those that attend upon them preserve their health. We are told, that in France, without careful ventilation, the very milk of the women who attend to the rearing of the Silk-Worm, (and that is the employment of women in France,) carries death to the infant nourished by it; nor can we who have been accustomed to the horrid exhalations that arise from a field overspread with caterpillars, doubt the truth of this statement.

Climate is every thing in the production of good Silk, as has been fully proved by its failure in England, in Ireland, in Prussia, (in despite of the patronage of Frederick the Great,) and even in France; for a small quantity of indifferent Silk, is, at best, all the product of France: all attempts upon this subject, therefore, in the Northern, or even the middle States, must, and will prove, abortive. In the year 1789, President Stiles, of Yale College, rode through Connecticut, distributing Mulberry seed; what we hear of

Silk from Connecticut, arises probably, from this source. Mr. Stiles was a scholar, and ought, therefore, to have been a man of knowledge, and to have known, that humanity in its weakness, has no energy to *waste*, upon a war with the elements.

A good many of us are putting out Mulberry cuttings—the day will not be distant, when this too will be added to the production of our country; but here also, the Legislature, by proper measures, might hasten this result fifty years;—and who, of our Statesmen, by any work they may perform, will merit to be remembered so long.

Olives.

I have had Olive Trees bearing, now, for some years. The winter of 1826, was the coldest within my memory; yet neither young or old Olive trees, had a leaf ruffled by the cold. My Olives came from Leghorn, in Italy, and would, therefore, be more sensible of cold, than Olive trees from the south of France. You will remember, that Arthur Young, in his Agricultural Tour to the Continent, on personal observation, divides the Mulberry tree, the Olive tree, and the Orange tribe, into three climates—embracing within each, two or three degrees of latitude. Where the Mulberry tree will grow, and produce a moderate result, the Olive tree is often destroyed, and its profitable culture prevented; where the Olive tree is cultivated as a productive crop, the Orange is not seen;—for, I believe, they no where flourish in the open air in France, but at the island of Hieres, and a few solitary spots in the vicinity of Toulon and Marseilles:—nor are the Oranges abundant any where in the north of Italy, but about the lakes, and the Boromean islands.

Charleston, and an hundred miles from the coast, is certainly as warm as the north of Italy, and warmer than any province in France;—and, as far as my own experience goes, our sandy soils, free of a clay sub-stratum, will answer best for them. Mine have grown with the vigour of our native oak—and for their age, are nearly as large as oaks would have been. Mr. Couper, with whom you are in correspondence, has not long since, imported two hundred from the south of France;—they were brought through the Languedoc Canal to Bordeaux—but they cost him two dollars and a half per tree, delivered at Savannah. This is too much for us to afford upon an extended scale. It

therefore becomes the more necessary, that our Legislature should establish nursery grounds for the Olive tree—when, in a few years, our two States, would furnish the United States, at least, with Oil; better, because fresher, than what can be imported. Oil, too, is one of those productions that requires but little labour in comparison to its value; and, therefore, peculiarly adapted to our country, where labour is dear and land abundant. The Olive tree, is, perhaps, one of those productions, calculated, in the end, to equalise, or more than equalise our Atlantic with our south-western States;—for the cold blasts that would descend the valley of the Mississippi, together with the quality of the soil which superabounds in that western region, would prevent the Olive flourishing in the same degree that it would upon our warm, sandy soils. There is much difficulty in multiplying the Olives by cuttings; if put out in February, they linger long, and seem reluctantly to take root. For myself, for many years, however, I was employing cuttings that were too small:—none should be attempted less than an inch in diameter, from that to an inch and an half;—when, if cut about ten inches, laid in a trench well prepared, with manure at its bottom, the plants upon an inclination of from twenty to thirty degrees in the trench, one end consequently being about three inches, and the other about half an inch from the surface of the ground; many of the layers will grow, but they must be watched, and weeded and watered, for two or three months. In Leghorn, it is understood, that just about the surface of the ground, and upon the upper roots of the tree, bulbs are formed, something like the bulb of a potatoe, and these are carefully separated, and make fine plants. The seed has uniformly failed with me, and if they grow, we understand the fruit would be indifferent. I think the Black Haw of our country, is a species of the Olive, and that we might engraft upon it.

I will send you on soon, a memoranda made upon a Sugar Plantation, in Louisiana, by myself; giving the number of hands employed during the crop season—the number of acres cultivated—the quantity of Sugar produced—the number of days employed in manufacturing the Sugar—the machinery for grinding the Cane, and the boilers for reducing the juice into Sugar. This, I trust, as an appendage to my printed letter, will be sufficiently explana-

tory—but in truth I have not a copy of my letter, for I have been repeatedly called upon for it from distant parts.

If, however, on reading it over hereafter, any additions are necessary, they shall be made and transmitted to you, and remain, dear Sir, your's with esteem, &c.

THOMAS SPALDING.

ART. III.—*On the Method of Manufacturing Indigo on the Coast of Coromandel, in India, and Senegal, under the auspices of the French Government, by GEORGE M. GIBBS, of Combahee, S. C.*

[Addressed to WILLIAM WASHINGTON, Esq. and by him politely handed to us for publication.]

“ Combahee, December 3, 1827.

Dear Sir,—The importance of multiplying the staple productions of the Southern States, induces me to suggest to the consideration of the Agricultural Society of South-Carolina, the expediency of encouraging experiments in the cultivation of Indigo; and particularly, of manufacturing it from the *dry leaves*, as practised on the coast of Coromandel, in India; and recently, in Senegal, under the immediate auspices of the French Government—instead of from the green weed, as was formerly done in this State. According to information obtained from a highly respectable proprietor, and extensive practical manufacturer, during a period of fourteen years in the former country, (and now resident in this,) almost the whole of the Indigo made in Coromandel, is manufactured from the leaves of the plant only, after they have been dried, packed, and transported to the factories by the farmers, and, in most instances, from distant parts of the country. After the plant is cut, it is spread out to dry in the sun, on a space of ground left for the purpose, for about six or eight hours, when it is thrashed or shaken in the hand to break off the leaves, which crumble easily:—the stems are then raked off as useless, the impression being, from various experiments that this part of the plant contains, little or none of the colouring matter, and the leaves are packed away in the house, as tight as possible,

so as to preserve them from the air, until the harvest is completed, and the farmer is at leisure either to manufacture himself, or to transport them to the regular factories. If the season is wet, drying in the house is resorted to; and when the leaves crumble in the hand, it is considered indication of their being sufficiently cured. The advantages of thus separating the two operations of harvest and manufacture, (which otherwise go together, from the necessity of steeping the green plants as soon as cut,) the saving of transportation of the heaviest portion of the plant from the field to the vats, as well as the postponement of the manufacturing process, until the healthy season, when the superintendence of the proprietor may be obtained, will be at once apparent to the practical agriculturist. And if the cultivation only could be confined to the plantation, and the manufacture performed at regular factories, where the business could be conducted on a larger scale, there is little doubt but that (as in almost all other operations of the kind) superiority in the quality of the article made, and economy in the use of the raw material would be the consequence. The great objections of our old Planters to the pursuit, viz. the uncertainty of the result, and disagreeableness, if not unhealthfulness of the fermenting process, would be removed, and the simplicity of the whole business promoted. With a view to this end, a distinguished professional dyer of New-York, Mr. William Patridge, has offered to receive, to the amount of several tons, leaf raised the next season, and cured according to the foregoing directions; and will return to the Planter two-thirds of any profits which may result from the experiments made. This gentleman has obtained a patent for dyeing from the leaf, either dry, or in its fermented state, according to the African mode of preparing it, which is, by simply moistening and grinding the dry leaves sufficiently to produce fermentation and adhesion, so as to permit of its being rolled into balls, and packed for market;* and which is the same process generally pursued in preparing woad in England, and in which state the woad imported into this country is received. As it is believed that no experiments in preparing Indigo for market by this latter mode, have been made public, it is

* See Bancroft, on Permanent Dyes,—and Mungo Park's Mission to Africa, page 143, for another mode practised in that country.

presumed to be equally entitled to trial as any other, especially when it is considered that the African blue dyes are superior to those obtained from the best Madras Indigo.

The great superiority in the quality of Indigo now made, over that which was formerly produced either in India or America, its enhancement in value, and the constantly increasing demand, would seem sufficiently important considerations to induce a partial return to its cultivation, in the present depressed state of the Cotton market, independent of the benefit which may be expected to the land itself by a change of crop. It is true, that considerable doubt has been entertained whether the superiority of the Indigo now made, is owing to greater skill, or to the more favourable soil and climate of India.

There are two circumstances which appear calculated to promote a belief, that the former is the chief, if not the only cause; viz. that previous to 1779, the year in which the East-India Company commenced making Indigo in India, the article there was inferior to that made in the United States, from whence Great Britain received her principal supplies; and also, that of what is now made in Carolina, a portion is of the very first quality, as admitted by the dyers in the Northern States, who are in the habit of using, annually, the small quantity which is still produced in our upper districts.

The difficulty of obtaining accurate information as to the most improved modes of preparing Indigo, now practised in other parts of the world, renders it impossible to institute a comparison with that which was customary in Carolina, before it was abandoned as a staple, from which the extent of those improvements may be estimated. But it is reasonable to conclude, that under the patronage of the British Government, and with the aid of Chemistry, they must have been considerable. As far as I have been able to learn from the various sources consulted, they consist chiefly in the period of cutting the plant, as a subject of the very first importance;—and next, in the steeping and beating process—size of the vats, &c. It is universally admitted, however, that perfection in the art of Indigo making, is more a matter of experience than of science, and that no particular rules will prevail at all times, even in the same country;—that nothing, indeed, short of long practice and minute attention, can possibly lead to successful results.

As regards the proper time of cutting the plant, there is much variety of opinion. In Coromandel, it is not considered fit to cut, until the plant is in full blossom, and just before seeding;—whilst, in India, generally, (as stated in Loudon's *Encyclopædia of Agriculture*,) 'the plants are 'not allowed to come to flower, as the leaf in that case, becomes dry and hard, and the Indigo produced, is of less 'value.' The improvement lately introduced into France by M. Morina, an Italian, in obtaining Indigo from the woad plant by cutting the leaves when very green, instead of when ripe, as formerly, may, perhaps, add more strength to the latter opinion, from the similarity of the two plants. In a memoir on Indigo, lately received from a cultivator in the neighbourhood of Carraccas, it is observed, that "the weed is cut about three and a half months after planting; and the most certain method of knowing the period of its maturity, is, by squeezing the young shoots in the hand; if it cakes, it is not ripe—but if it pulverizes, it is then fit to cut."

When the green weed is to be steeped, from the necessity of doing so the same day on which it is cut, it is evidently impossible to harvest the whole crop at the precise period of its perfection, as this operation must be dependent on the progress of the manufacture; which circumstance, with the difficulty of obtaining skill in the manufacture, as well as the scarcity of clear and soft water in the low country, which is so indispensable in making good Indigo, afford additional reasons for confining the Planter to its cultivation only, should the plan proposed be found practicable.

The improvements which are stated to have taken place in the large factories in India, are chiefly in the attention to cleanliness, by which all extraneous matter is excluded, and the *expedition* with which the beating process is performed by means of machinery, and on which the quality of the Indigo is said so much to depend:—for, in the process of oxidizing, by which it is converted from the green to the blue state, the rapidity with which it is exposed to the atmosphere, is considered by chemists, as all-important to the perfect separation which should take place of the colouring matter from the salts and extraneous liquor:—and to the slow mode of doing which, as formerly practised in Carolina, as well as to the too great quantities of lime used to facilitate the precipitation of the feculæ, has been, in a great measure, ascribed to the inferiority of the article made. In

India, lime-water only is used, and that sparingly;—and, in testing the perfection of this stage, it is observed that the most certain indication, next to that of the apparent separation of the dregs, is the colour of the water, which should be that of brandy; and if either green or black, that there has been a defect, and the Indigo will not be good. If my information is correct, that it was customary, formerly in this country, to continue the beating after the precipitation was observed to have taken place, it may be considered as another great defect, as it is now well understood, that in this event a reversion of the particles, and consequent formation ensues, which completely spoils the colour.

Similar expedition is attended to in the previous steeping of the weed, as twenty minutes only is prescribed as proper to be allowed for filling the vats. It is in this branch of the business, that the greatest advantage results from the use of the dry leaves; for, in steeping them, only one or two hours is requisite to extract the colouring matter, and no fermentation takes place:—whereas, in fermenting the green weed, twelve hours or more is required. Besides which, there is always some uncertainty in the success of the latter process—for, if the fermentation is too great, the quantity is increased, but the quality certainly injured.

The dimensions of the vats (which can be furnished if desired) are proportioned to each other, and greater success is found to exist, when the business is conducted on a large than on a small scale.

In the cultivation of the plant, there does not appear any material difference in the different countries where it grows, other than such as local circumstances render necessary—and the probability is, that the mode best suited to our soil is that which was practised.

In the State of Salvador, (the crop of which, for the year 1825, was valued at \$2,400,000,) a rich, moist soil is required—the seed is sown three or four inches deep, and the plant flowers in two months. In Coromandel, a cool soil is preferred, by which is meant, that where water is found at a short distance below the surface; and the height which the plant attains, is a strong indication of the quantity of colouring matter to be expected—it being observed, that four feet was the best height, and that when it reached eight feet, the quantity and quality of Indigo made were both deficient.

The quantity of Indigo made to the acre is not easily ascertained. In the West Indies, where it is cut three or four times, the yield has been as high as five hundred pounds—and, in some of the interior provinces of Hindostan, when they have as many as nine cuttings, it is said to be still greater.

When it is considered that the estimated value of the Indigo annually consumed in the United States, is upwards of \$4,000,000, and that the increasing demand is likely to keep pace with the increase of manufactures generally;—that a protecting duty of fifteen cents a pound already exists, and that complete security from foreign competition must ensue, should the contemplated commercial policy of the country go into effect,—the expectation may not be chimerical, that this valuable plant, which is indigenous to the soil of Carolina, will, once more become a source of wealth and prosperity to the State. With great respect, I am, Sir, your obedient servant,

GEORGE M. GIBBES.

P. S.—I send you a few roots of the madder, which, as well as the wild plant, and the Sicily Sumach, are articles of increasing consumption in the manufactories of the North, and may be well worth trial in this climate. Several very profitable experiments have been made with them recently at the North; and the wild Sumach has been cultivated to some extent, although the quality in that climate is so inferior as to command only one half the price of that which is imported from the more mild regions of Portugal and Sicily.

ART. IV.—*Reflections on Planting of Seed Rice; by*
JOSEPH S. BOSSARD.

“ December, 28, 1827.

Dear Sir,—I embrace an early opportunity to communicate for publication, in your newly established Journal, some reflections on the subject of Rice planting. I offer them, however, with deference to the opinions of my seniors, in that species of culture; and, with a belief, that, although objections may be offered to the principles here advanced, yet still, there may be some advantage reaped from the dis-

cussion of a subject which touches the interests of our Southern Agriculturists.

The branch of the subject to which I shall at present confine my remarks, will be that of the cultivation of Rice, intended for seed; an object, which, I think, has heretofore received too little attention. It must, at first view, strike the most indifferent, that upon the quality of the seed much depends as to the future crop—and consequently, any observations tending to elucidate the manner in which it is most perfectly produced, should deserve the attention of the Planter.

From facts, which repeated trials have offered to my notice, my opinion is, that Rice intended for seed, should not be planted earlier than the middle of April, nor later than the tenth of May. By too early planting, the grain will germinate in a soil that is cold and unfriendly to its growth, and which will consequently impart in a greater or less degree, a debility or sickliness to the plant, proving injurious to the eye of the grain in its state of maturity, an effect that must necessarily render it unfit for great productiveness.

The truth of this opinion may be questioned on the principle, that the roots from which the plant first receives its nourishment decays, and that new ones are formed at a more advanced period of the season. This point is admitted so far as it applies to what are termed the *lateral* roots. They often change, but the main root from which the plant receives its earliest support, never, according to my observation, becomes totally changed;—and, if, from being early exposed to an unfriendly temperature, this root should receive any check, we may readily conclude that the future seed will not be so perfect. This root being the trunk from which springs numerous smaller roots, for the support of the growing plant, it would appear reasonable to conclude, that any injury which may be sustained, would be measureably imparted in its whole progress to maturity; and the eye being the most vulnerable part of the grain, it is the more exposed therefore, from its extreme sensitiveness to all inclemencies, tending to render it bad seed—bad inasmuch as its germinating properties being weakened, a greater quantity of seed will be required, and when it has sprouted, it will not produce so healthy and vigorous a plant.

What is here alluded to by main root, is that which is simultaneous with the sprout, and to which, the grain adheres until it decays, or is otherwise exhausted. This root

I have noticed usually descends about two inches in a perpendicular direction—puts forth numerous small fibrous roots, and is, at this period, not easily distinguished from them,—but, at a more advanced period of the season, it will have increased to the size of a small reed or pipe stem, becomes hard, and forms short hollow joints, circumstances which do not exist with regard to the smaller roots, some of which have their origin from this main root, and others protrude from the lower part of the stem.

In reference to the other objection, namely, late planting, I am of opinion, that owing to the cold dews so common in our climate, on the approach of the fall season, that the grain comes to maturity under unfavourable circumstances. Being thus exposed when in blossom, or in the milky state, is evidently another cause of deterioration; and, although it may be said, that these causes do not shorten the product, nor alter the quality of the Rice for market; I am still led to conclude, that the seed, so far as its germinating properties are concerned, are materially injured:—hence it follows, that Rice intended for seed should be put in the ground at a crisis during the planting season, by which these effects will be avoided.

Another object particularly referring to the culture of Rice, designed for seed, and which, I think, merits equal attention with those already mentioned, relates to the time of reaping, and the use of the water. Rice is an aquatic plant, and, therefore requires its due supply of this necessary means of its growth, to promote its vigour, but it should not be applied so as to force (if I may so speak) a premature growth of the plant, as there is sufficient time, under proper management, during the progress of the season, for it to ripen.

The custom which has not long since been adopted, namely, that of cutting Rice before it is fully ripe, with a view of rendering it the more impervious to the pestle, may be well enough, so far as that end alone is to be answered; yet, with regard to Rice intended exclusively for seed, I am of opinion, that the practice is a bad one:—but this remark, which I deem merits some attention, together with the foregoing, I beg leave, respectfully, to submit to the consideration of your numerous readers,—and am, Sir, very respectfully your's, &c.

JOSEPH S. BOSSARD.

ART. V.—*Account of an acre of Green Seed Cotton, Manured with Lime, by C. E. ROWAND.*

Dear Sir,—I herewith send a short sketch of an account of the planting and attendance bestowed upon one acre of short staple Cotton, planted upon swamp or reclaimed marsh land, which had been cultivated the year previous in Rice. If you think the mode of treatment calculated to throw light upon the subject, whether lime is beneficial to such lands, it will afford much pleasure, to think I have been instrumental in furnishing one item towards promoting the good cause of Agriculture. The acre of marsh is a component part of a field of twenty acres, and was put into complete order by the usual and necessary ditches and quarter drains generally dug in Rice fields, when in the highest tilth. On or about the middle of March 1826, the land was listed and ridged in the usual way, at the distance of five feet. On the 29th, one bushel of green seed was planted in chops of the hoe, about twelve or fifteen inches apart. It was attended in the usual way, and kept clean of grass, by hauling the dirt up to the roots of the plants. On the 27th of June, one bushel of common shell lime was applied to one-half of the acre, by scattering it upon the top and along-side of the beds. Another bushel was applied in the same way on the 12th of July, upon the same half acre, and in the same way. The difference in the growth of the plants upon the two half acres was visible and was the subject of inquiry as to the cause which produced such an appearance, so decidedly in favour of the limed part. The opening and picking commenced about the latter end of August, or first week in September. The product was two hundred and ninety-six pounds of clean saw ginned Cotton—the greatest part of which was produced from the limed half acre. The stained was not ginned, but I think may be put down at about six or eight pounds. The season, at its commencement, was very unfavourable, from a drought which prevented the Cotton coming up, which continued until the latter end of July, when we were favoured with plentiful showers. There can be no doubt but that the product would have been considerably greater, had the season at its commencement been favoured with refreshing showers, and warm nights. I remain, very respectfully,

CHARLES E. ROWAND.

PART II.

REVIEW.

ART. I.—*A Report accompanied with sundry Letters, on the causes which contribute to the production of fine Sea-Island Cotton ; read before the Agricultural Society of St. John's, Colleton, on the 14th March, 1827. By WHITEMARSH B. SEABROOK, Corresponding Secretary. Published by order of the Society. Charleston. Miller. Svo. pp. 36. 1827.*

(Continued from page 80.)

From the excellent and useful Report of Mr. Seabrook, which has already received the tribute of our highest approbation, and from which we have enriched our preceding numbers with copious extracts; we now turn our attention to the interesting letters that constitute the Appendix.

A Circular was addressed, by the Corresponding Secretary of the Agricultural Society of St. John's, Colleton, to Messrs. Elias Vanderhorst, Thomas A. Coffin, Kinsey Burden, William Seabrook, sen. and John R. Mathewes, as extensive and distinguished Cotton Planters, and especially as having been pre-eminently successful in producing the finer qualities; soliciting from them such information, as to their mode of culture, and the results of their experiments and observations, as they might deem of public utility, and might be willing to disclose. In reply to this communication, those gentlemen, with a readiness and public spirit which do them honour, and with a clearness and accuracy which evince uncommon practical, as well as scientific knowledge of the subject; communicate such statements of their mode of cultivation, and such observations upon soils and manures, as form a valuable collection of important facts, and deserve the gratitude of the community. We are greatly mistaken, if the pamphlet under review, will not cause a new era in the agricultural history of this lower country. Its disclosures are so interesting, its arguments so irresistible, and its directions so plain and important, that it can hardly fail to give a powerful impulse to industry

and enterprise; and to exert a most beneficial influence upon public sentiment.

The letters before us are so intrinsically valuable, and consist so much of separate facts and observations, that we should do injustice to those of our readers, who have not the pamphlet in their possession, by attempting to give an abstract of their contents. We shall, therefore, merely transfer them to our pages, with such omissions as will prevent repetition, and with such brief remarks as we may deem necessary. The Circular it is unnecessary to transcribe, because the inquiries of which it principally consists, will be found in the answers.

The first of these answers we now lay before our readers.

"Sullivan's Island, September 1st, 1826.

"*Dear Sir,*—Your useful circular has been received. I answer, with pleasure, your queries, as far as my limited knowledge of the subject adverted to will admit. You observe, "such other information, in relation to the subject matter of this communication as you may be willing to disclose." Permit me to assure you, Sir, if I had the good fortune to possess any information, not generally known, upon the culture of the Cotton plant, or its preparation for market, nothing could afford me more satisfaction, than to disclose it for the benefit of others. A Planter who would, from interested motives, conceal any discoveries which might improve the culture or the preparation for sale, of any of our staple products, must certainly be deficient in that patriotism and liberal feeling, which, at least, are supposed to govern every gentleman in this community.

"Question 1st. Is all your Cotton equally fine? If not, what description of your soil yields the most silky? A. I consider that the most sandy parts of my soil produce the finest Cotton, and the most silky.

"Q. 2. What manure do you esteem the best to improve the fineness of the staple? A. I have never used any but the soft salt mud; it is taken out of the creek during winter, and spread in the old alleys with the back of the hoe, about two inches thick in the lowest spots; and in the most sandy, not more than a quarter of an inch. The land is then listed over the mud before it becomes hard. I have never manured more than eighty-five acres in one winter.

"Q. 3. Is your Cotton, which is so distinguished for one quality remarkable also for the length and strength of its staple, or both? A. As machinery is the only test for fine Cottons, allow me to give you an extract of a letter, addressed to me from one of the most respectable spinners in Manchester. "Although your Cot-

ton is second to no *mark* (brand) in health and fineness, still it does not possess sufficiently the latter requisite to spin our very finest numbers."

"Q. 4. What has been your average crop for the last five years, and what quantity do you plant to the hand? A. I have never made more than 150 lbs. to the acre, and plant very short to the hand, in consequence of not having a sufficient quantity of land.

"Q. 5. Are you very particular in the selection of your seed, and which kind do you prefer; the small or the large—the perfectly clean, or that which is a little woolly? A. I select that which has a little wool at the ends, but am not satisfied as to the advantage of it.

"Q. 6. Have you ever tested the experiment on the difference of the product and quality of Cotton, from seed taken from the bottom, middle or top of the stalk? A. Never.

"Q. 7. How do you preserve your seed? Is it kept in a confined situation, or in a well ventilated room? A. It is kept in a loft over my gin house, without any aperture to admit air.

"Q. 8. In gathering your crop, do you ever pick the wool from those pods, that, from their immaturity, are but imperfectly open? A. Never.

"Q. 9. Do you dry your Cotton in the sun or in the shade? If in the sun, how long? A. I always dry in the sun, and suffered it, until the last year, to remain on the cotton scaffold the greater part of the day.

"Q. 10. What is your mode of preparation, and what quantity do you clean to the hand per day? A. I require the Cotton to be picked carefully from the pods, without leaves or dirt of any kind, and am very particular in the assorting before it goes to the gins. I give 28 lbs. as a task in moting.

"Q. 11. Are you in the habit of using the whipper before or after the Cotton is ginned, or in both instances? A. I use the whipper *only* for the Cotton which is picked after frost, and for the stained, the operation is performed before it goes to the gins.

"Q. 12. What is the character of your soil? Is your land high or low, indented with creeks, and how far from the ocean? A. I have both high and low land in the same fields; white sand in the highest, and a grey soil in the lowest. There are no creeks running into the fields; the distance from the ocean varies from a quarter to a half mile.

"With extreme regret, that the information I am enabled to impart, is so very limited, on the important subjects embraced in your Circular; I remain, very respectfully, your obedient servant,

E. VANDERHORST.

"TO WHITEMARSH B. SEABROOK, Esq.

Cor. Sec. of the Ag. Sec. of St. John's, Colleton."

The foregoing letter, evinces how important are the natural advantages of soil and situation, to ensure success in this branch of Agriculture. It would seem that a very sandy soil, enriched with salt mud, and exposed to an atmosphere directly from the ocean, is peculiarly well adapted to produce the finest Cotton. Perhaps experiments may be made, upon this suggestion, which will prove, that many barren sandy plains, in the vicinity of the sea, now esteemed worthless, are susceptible of the most profitable cultivation.

The next letter in order, is as follows.

"St. Helena, December 26, 1826.

"*Dear Sir*,—On my arrival from the North, I received your favour of August, and hearing of your absence from home, have delayed acknowledging its receipt. The zeal you manifest in promoting the interests of Agriculture, and particularly that branch of it, in which we are mutually interested,—by seeking the interchange of opinion, would alone be sufficient apology in addressing the Circular. It would afford me much satisfaction, could my limited experience enable me to throw a ray of light on the subjects embraced in your queries. The replies to them, you will accept, more as matters of opinion, than conclusions founded on definite practice.

"Question 1st. Is all your Cotton equally fine, &c. A. I think not, but I have never heard purchasers remark any difference, when I have separated the high from the low land. I prefer the Cotton on the most sandy high hills, it being more productive and silky.

"Q. 2.—A. I have generally used the marsh mud taken from the creeks; sometimes green marsh.

"Q. 3.—A. My Cotton derives its character from its silkness, strength, and evenness of fibre.

"Q. 4.—A. Caterpillars and storms have destroyed some of my most promising crops; but I think 450 lbs. per hand, are about the average. I generally plant nearly three and a half acres to the hand.

"Q. 5.—A. I have generally preserved the seed from my earliest pickings; sometimes I have planted seed, exchanged with my friends, both North and South. I think the Cotton produced from the seed, with a green tuft, the finest and most silky, though not the most productive.*

"Q. 6.—A. I have not.

"Q. 7.—A. I am not particular, so that it is kept dry.

* In a letter subsequently received from Mr. Coffin, he states, that the finest Cotton he has ever seen, was from seed covered entirely with a green woolly coat.—*Sec.*

"Q. 8.—A. My orders are to pass over defective pods, to save the trouble of selecting them, when assorting; but, from the difficulty of seeing these executed, I presume they are much neglected, especially after a frost.

"Q. 9.—A. Generally one day on a scaffold, unless the Cotton has been wet.

"Q. 10.—A. I am not aware that it differs from that of my neighbours. I handle it as little as possible after it comes from the gin.

"Q. 11.—A. Before the Cotton goes to the gin, but not after.

"Q. 12.—A. High and low; mostly high: a yellow mixed sand on the hills, and black or grey in the narrow vallies, which run N. E. and S. W. through the extent of the Island. I am on a neck of land, two sides of which are bounded by creeks, and one side by the ocean.

"I have *once* used a *machine gin* from St. Simons' Island, to the rollers of which, made of hickory, I gave as many as six hundred revolutions in a minute. I ginned above twenty bales of Cotton with this gin, and heard no complaints about the staple being injured; but my negroes continually putting it out of order, and my impelling power proving defective, I laid it aside. I introduce this remark, hoping that the want of a gin, as well adapted to the Sea-Island Cotton, as Whitney's saw-gin is to the upland, may stimulate some of our Planters, in their exertions, to produce one. I am, very respectfully, your obedient servant,

THOMAS ASTON COFFIN.

"To WHITEMARSH B. SEABROOK, &c."

There will be remarked, in Mr. Coffin's letter, a striking corroboration of preceding statements, in relation to the advantages derived from sandy soils, in the vicinity of the sea, and from the use of salt mud as a manure. The observations also upon the selection and exchange of seed, will not fail to engage the attention of the enterprising Cotton Planter.

We have only room in the present number, to insert the letter of Kinsey Burden, Esq.; reserving the two others, together with some accompanying remarks, for our next.

"John's Island, St. John's, Colleton, October 4, 1826.

"*Dear Sir*,—It not being convenient, at an earlier date, I have postponed the reply to your letter of the 9th of August, to the present time, and now proceed to give you the requested information as far as my own observations and circumstances will

permit. To some of my answers, I have subjoined the remarks of a distinguished spinner, who has favoured me with his opinion on some of the points of inquiry contained in your interrogatories. They are marked as quotations. If any thing I may communicate, will add but one idea to the general stock of useful knowledge, already possessed by the Agricultural community, I shall be gratified in being instrumental in promoting that object. The answers to your queries will be set down in the order you have numbered them.

"1st. The Cotton raised by me is all fine, but not equally so: I apprehend some shade of difference in the Cotton of every field, will be a certain result, where there is any diversity of soil; or, while any inequality of strength in the land exists. I have hitherto believed that high, light, rich soils produce the finest Cotton; but I have not yet tested this opinion, by repeated or satisfactory experiments, to decide whether I am correct or not.

"2nd. In different parts of my fields, as most convenient, I have used fresh mud—salt-mud—salt-marsh—rushes—leaves and rotten wood, and composts of the four latter, with cow dung, applied in proportion to the natural strength of the land, and to the fertilizing qualities of the manure; from 21 to 84 single horse cart loads per acre, so as to give health and vigour to the plants, and equalize their growth as nearly as possible. I am best pleased with the salt-mud, salt-marsh, and the compost of salt-marsh and rushes, combined with animal manure. They improve the length, strength, and silky appearance of the staple in a great degree; but I am unable to say, positively, that they increase the fineness of the fibre. I have noticed that Cotton which has not arrived at full maturity, from being injured by rust or frost, will be finer, but of more tender fibre, than Cotton produced in the same field, fully matured, particularly on strong land.

"3d. The length and strength of the staple depend chiefly on the natural strength of the soil; and on the application of fertilizing manures, where necessary, in order to equalize the strength of the land as much as possible; when this is accomplished, the Cotton produced will be nearly all alike.

"4th. My average crops for the last five years, have been 98 weight per acre; and two and a half to three acres are usually planted to the hand.

"5th. I have generally been particular in selecting from the earliest ripe Cotton, produced on the best land, the seed which has a small tuft at the point, and that which is clean and black; but neither of these will always produce the same kinds of seed only; they must be annually cleared of their degenerated woolly associates, which sometimes produce fine long Cotton; but generally, the staple is short or of an uneven length. I have found it a good rule in saving all kinds of seed, to see that portion

which is most perfect and comes to maturity first. The size of Cotton seed varies like all other seeds, according to the strength or poverty of the soil in which it is produced. Its colour is also changed from black to brown, by exposure to the sun or frost.

"6th. I have never made this trial with Cotton.

"7th. Hitherto, my seed has been kept in a close room. I do not know that it is necessary to ventilate it, unless it be damp.

"8th. My instructions to the gatherers are, to gather from the field, at every picking, all the Cotton, good or bad, which is blown open sufficiently, to enable them to extract the wool with ease. The reasons for being so particular, are these;—if the bad Cotton be left, to be gathered at a future period, before the gatherers return to the field, it will have become so much bleached by the weather, that it cannot then be readily distinguished from the good, either by them or by the hands who afterwards sort it for the gins; and, if ginned with the good, the extreme weakness of its fibre will depreciate the value of the general crop in proportion to the quantity of it, which may be mixed with the good.

"9th. My directions given, are, to dry the Cotton in the sun, only so much as will be necessary to prevent the seed being crushed by the rollers. This must be varied according to the state of the weather, and the condition in which the Cotton is gathered from the field. When the weather is dry, if the gatherers go out after the dew has evaporated, and the Cotton is exposed to the sun on the sheets, as fast as gathered; then spread in the house until the next day; then on the scaffolds for five or six hours; and again spread in the house a few hours, to let the heat fly off, before it is packed away; I have found it sufficiently dry for the gins. If packed away damp, it will generate heat in a short time, ruin the fibre, and unfit the seed for planting. I prefer drying in the shade altogether, when practicable. "One thing we are sure of, the less Cotton is exposed to the air, and the closer it is packed, the better it is. We think that exposure to the air is prejudicial, by drying the natural moisture of the fibre. Cotton dried before the fire, becomes brittle and tender, and we doubt, whether if damped again, it ever regains its natural strength."

"10th. The gatherers commence their labour after the exiccation of the dew; at every emptying of their picking bags, the stained and rotten Cotton are taken out, with any leaves that may have fallen in. If the Cotton has been gathered with care from the field, 100 weight to each labourer, may be separated with ease for the gins. The Cotton is then passed through a double drum whipper, and goes to the gins. Five to seven weight to each gin, is ginned in the evenings, or 25 weight of clean Cotton for a day's work. The ginners are directed not to screw more pressure on the rollers than is necessary to prevent the seed

being crushed, and the Cotton should be as evenly spread to the rollers as possible, to prevent injury to the staple. The moters prepare 25 to 30 weight each, for the bag. One person searches for a bag of 300 hundred weight, if the Cotton has been cleanly moted. The sorting of the seed Cotton; moting of the ginned Cotton, and searching for the packer, are all done on frames of wood, or on coarse wire sieves reversed. The sieves I have found very convenient.

" 11th. I have generally used the whipper for the seed Cotton only; but latterly, have used it for the ginned Cotton also; I think, with great advantage, before moting. It expedites the moting, and does no injury to the fibre, if passed through but once. "The less fatigue the fibres are exposed to, the better; "switching, if done in moderation, and so as *not to string* the "Cotton, (which is to be apprehended in long fine staples,) is a "very harmless, and we think, effective operation. Ginning, by "means of rollers, if much pressure is applied, or if the Cotton "is not evenly spread, so as to distribute the pressure equally, is "dangerous; since pressure completely destroys the fibre." I send you a "sample of Cotton, which has undergone pressure "between a pair of smooth iron rollers; the staple is perfectly "destroyed." Iron rollers are now generally out of use in this part of the country; but, too much pressure upon hard wood rollers, will, also, do much injury.

" 12th. My soil is partly of a low, heavy loam, and sand, on a clay foundation, and partly high brown mould, on sand and clay, indented with creeks, and situate on a large salt river about six miles from the ocean. I remain, with respect, your most obedient servant,

KINSEY BURDEN.

" To WHITEMARSH B. SEABROOK, &c."

(To be continued.)

SELECTIONS.

ART. I.—Silk.

We are indebted to a gentleman of this city, who has exerted himself to promote the culture of Silk, for the following interesting letter on the subject, from Mr. Smith, of Baltimore, who is already advantageously known, for the valuable information he has contributed.—*Sav. Georgian.*

Extract of a letter to a gentleman in this city, dated

" Baltimore, December 29, 1827.

Sir,—Your's of the 20th instant, making inquiries relative to the cultivation of Silk, is now before me. Having for several years entertained the opinion, that Silk might

be made one of our staple articles, not only of agricultural production and domestic consumption, but of exportation; attention has been most earnestly directed towards its introduction—and, with a view to this, a few years ago, I obtained some Silk-Worm seed, or eggs, of the best Italian stock, and commenced cultivating the worms for the double purpose of acquiring practical knowledge of the process, and also a supply of eggs for distribution; and I have continued the cultivation every year since, which has enabled me to afford practical knowledge on the subject to others. Pecuniary gain has not entered into my mind on the subject; for my profession excludes the idea of entering into the cultivation, upon a scale sufficiently extensive, for a money-making concern;—but I found that the production of eggs, and giving full directions for the management of the worms, had become too burthensome, for the gratuitous contribution of a single individual; and, therefore, I determined on making a charge of five dollars, for a supply of eggs, and ample direction for the culture which would enable any individual to commence operations, who had the requisite mulberry trees. I therefore most cheerfully offer you such information as I possess, on the subject of your inquiries, and shall take pleasure in forwarding the eggs whenever you may order them.

I have little doubt that the mulberry trees you describe on your place near Savannah, are the proper kind for the production of Silk. The leaves I use are from trees, the fruit of which is called white, in distinction from the black, though it is by no means white in fact. The fruit, when ripe, is rather of a pale purplish green. Whether your mulberry, however, is the real white or not, matters little; experiments have demonstrated, that all the kinds of mulberry are nearly equally good for the purpose. I will proceed, therefore, to the subject of your inquiries.

The climate of Georgia, as well as that of the whole United States, indeed, is well adapted to the culture of Silk. Wherever the mulberry thrives, (and where does it not?) the silk-worm will also thrive. Other circumstances concurring therefore, you may enter upon the culture of Silk with as much certainty of success, as you could upon the planting of a field of Cotton or Rice.

The expense of a Silk establishment, will be comparatively nothing. For a very extensive one, a rough cheap

building will be required, which would cost a hundred or two dollars, and ten or twelve acres of land, for raising mulberry leaves, (which, for such an establishment, it would be best, probably, to raise, by sowing the mulberry seed *broadcast*, and mowing the tender shoots for the worms as they are wanted.) The fixtures would not probably cost fifty dollars. I am speaking now of an establishment that would produce from 1000 to 2000 pounds of Silk, worth \$3 50 cts. per pound. The hands necessary to conduct it, would be those who are too old or too young for other work—and of these, from ten to twenty only would be required. The whole process, "*ab ovo usque ad mala*," is as simple, if not more so, than the cultivation of Cotton; and, therefore, even children can do the greater part of the work.

From the above, you will perceive, that the management of the worms requires no great skill—care it certainly does; but such, only, as any body is fully competent to bestow. The room in which they are, must be kept perfectly free from tobacco smoke, or other effluvia—from *ants* and other insects, which destroy the worms, the latter being perfectly defenceless. The temperature of the weather must be attended to, and if cold and chilly, a little fire must be kept in the room, merely enough, however, to keep the thermometer at 70 deg. or upwards. If the atmosphere be very damp, a little salt-petre, say the size of a filbert, must be burned on a shovel of fire coals.

I would suggest, that you and your friends try the experiment, with a thousand worms, which will be amply sufficient to afford you all necessary practical knowledge, and a supply of eggs for the commencement on an extensive scale, and will be attended with no expense whatever, except that of the eggs and directions. The directions I will now proceed to give you in advance.

In the spring, as soon as the weather shall have become settled, and the mulberry leaves put forth, which, with you, will generally be the case, between the middle of April and the middle of May, bring out the eggs for hatching. (I am speaking now of the management of a thousand worms.) For this purpose, place a table covered with paper, in the middle of a dry, airy room, rather darkened, by partially closing the shutters. Lay the eggs on the table, and, if the temperature is at 80 deg. or upwards, (which it ought to be before you bring out the eggs,) they will hatch in the course

of five or six days. Nothing else is required to hatch them. As soon as you observe the little worms coming out—which will look like a swarm of the smallest of the little red ants that infest our houses,—gather a few tender mulberry leaves, and lay them close beside the worms, taking care not to lay them on the eggs—for there will be many not hatched, and the leaves would cool and prevent their hatching. The little worm will soon find the leaves, and begin to eat. Five or six leaves torn in small pieces, will be enough at a time, at first. As fast as the leaves wilt or become dry, lay on fresh ones—three times a day will be often enough for the first fifteen days. Always lay the fresh leaves close beside the dry ones, so that as the worms go over the former, you can once in two or three days remove the dry leaves, which, if permitted to accumulate, would injure the worms. After the 20th day, however, the worms will have become so vigorous, and will so nearly consume the leaves, that the removal of the dry ones will no longer be necessary; and from this time, leaves must be given the worms, as often as they either become wilted or consumed; the rule then is, to give the worms as many leaves as they can eat, and as often as they want them; and if they can be attended to at night, it will be still better to attend to this rule night and day. During this part of the process, lay the leaves whole upon the worms, covering them “all over”—they will soon get upon the top, and amuse you not a little, with their industry in eating. Between the 30th and 36th day, from the time of hatching, they will cease eating, and commence spinning silk—that is, if they have not been retarded by cold and unfavourable weather. We will now mention some particular circumstances to be attended to, and then proceed to the description of the spinning department.

About the 6th day after hatching, the worms will appear sickly and stupid; they are then beginning to *moult*, or shed their skins, and will recover in a day or two. This happens four times—say on the 6th, 12th, 18th, and 24th days. At first, the worms will not occupy a space over two or three inches square;—on the 25th day after hatching, they will require (1000 of them), a space, six feet square, and as they grow, from the first, they must be gradually spread over the table, that they may not be too much crowded—they may be as close as your fingers, but ought not to lie on top of one another. Persons ought not to breath on

them, while looking at them, as they are very sensitive, and the human breath is very offensive, even to *worms* "of a larger growth." If any of the worms are sick, they must be removed, as they are likely to affect others.

For the worm to spin on, some chesnut twigs, well covered with leaves, should be provided, and tied in bunches about the size of a large broom, or they may be laid loosely on a table, separate from the one on which the worms are feeding. If chesnut bushes are not at hand, probably *Chinquapin* would answer. If neither be attainable, get a quantity of dry twigs of almost any kind, tie them loosely in bunches, resembling small trees, and set them up endwise on the spinners' table. Little harbours may also be formed, by weaving the twigs loosely together, and the balls of silk spun on them have a very handsome appearance. These things prepared, your attention must now be turned to the worms, to see if any are ready to spin; to ascertain which, look for the following indications:—when a worm is ready to spin, it will cease eating, wander about, become partially transparent in the body, and will be observed to leave fibres of Silk on the leaves and wherever it goes. When these things occur, lift the worm by means of the leaf on which it is found, and bear it to the bushes on which it is to spin, and place it thereon—it will soon begin its spinning, and in the course of 24 hours, it will have enclosed itself in its ball, or cocoon of Silk, which will be about the size of a pigeon-egg, of a beautiful sulphur colour;—in four days the cocoon will be finished, and the worm will begin to change its form. In this way, all the worms must be managed, and those which begin to spin, each day must be separated—and on the 6th day, after the beginning of the cocoons, they must be removed from the bushes, stripped of the loose coarse Silk or tow, with which they are beset, and disposed of for the reeling, or for the production of eggs as is required. Those intended for Silk, must be put in an oven, about half heated, for half an hour, to kill the worm in them, else they will come out and spoil the Silk. Care must be taken that the oven be not so hot as to scorch the Silk. After this, the cocoons may be laid away for *reeling* at your leisure.

For the purpose of obtaining the Silk from cocoons, take those which have been baked, and put about fifty in a basin of water, of a temperature so hot, only that you can

bear your hand in it without pain; then with a wisp of twigs stir them briskly about, till you observe the end of one or more fibres of Silk, attached to the wisp;—secure the fibres, and continue the operation, till as many fibres are obtained as you may want for a strand of the thread you intend, say twenty, or upwards—then join them, and carry them to a common reel, to which attach them, and wind the Silk off slowly, beginning at one side of the reel, and laying on the thread, singly, till you get to the other, that the first laid on may get dry, before it is covered by another thread, else, in consequence of the gum in the Silk, they will adhere. Attention is required, that when a fibre breaks, it, or another, may be secured to keep the thread equal. This is the most delicate operation in the culture of Silk, and requires great care and attention. After the cocoons have been baked, they may be reeled at any time.

Those cocoons, from which eggs may be expected, must be taken on the 6th day, after the commencement of spinning, and laid in rows on white paper, on a table or floor, in a very dry room. The rows must be about a foot apart, and composed of two or three cocoons, beside each other, touching length ways of the rows. In eight or ten days the worm will have changed its form, and will come out of the cocoon in the form a *Papilio*, or greyish white miller or butterfly. In from twenty-four to forty-eight hours, the female will begin to lay eggs on the paper, between the rows of cocoons, and in two days she will have laid about two hundred and fifty eggs, of a bright sulphur colour, of the size of a mustard seed. The eggs change colour in a day or two, and become, to the eye, of a bluish lead colour; but when seen through a microscope, they are speckled like sparrows, or rather like blackbirds' eggs. Those which remain yellow, not having been fecundated by the male, are barren and good for nothing. There will, however, be few or none of these; when the males and females are equal in number, as is generally the case. As the *Papilio* ceases laying, remove the eggs, and the paper to which they will be attached, to a cool dry cellar, or other cool dry place, and there keep them, (in a box, which does not exclude the air, but which will protect them from ants and other insects,) for next year's use.

From a thousand eggs you will be able to obtain, besides the practical knowledge, about 250,000 eggs for the next

year's use, which would produce about 250 pounds of Silk. It may be estimated, that a thousand worms will make a pound of Silk; a thousand worms eat about thirty-seven and a half pounds of mulberry leaves—but seventy-five pounds ought to be at hand, to guard against want in bad weather, &c. A mulberry tree, the foliage of which would measure seven or eight feet square, as it stands, may be safely calculated to produce one hundred pounds of leaves, and in the same proportion will be found the quantity of foliage, on a larger or smaller tree.

The directions for managing worms, as above, are intended for the experimental process, with a thousand worms. That experiment will, itself, suggest to you, all the deviation from those directions, necessary in an extensive establishment, and which will only consist in having a separate house and fixtures, in the form of shelves, on which to feed the worms.

It would probably be advisable for you, if you want them, to order the eggs as soon as possible, as there are many applications, and my stock will be exhausted before long. I can supply, at this time, and for a fortnight to come, as many as you and your friends may want. They go perfectly safe by mail.

ART. II.—*Brief Observations on Salt, as Manure; by*
CHARLES PEIRCE.

“Germantown, November 12, 1819.

My Dear Sir,—I have perused, with pleasure and profit, the interesting pamphlet which you were pleased to put into my hands a few days since, containing “A letter to the farmers and graziers of Great Britain, on the use of Salt in the various branches of agriculture, and in feeding all kinds of farming stock, &c., by Samuel Parkes.” Many of the observations, together with the recitals of his experiments, I am satisfied, from my own experience, are correct, inasmuch as they are founded upon the same principle, in the improvements of agriculture, which I have pursued for several years. In the course of the last year, I made some

new experiments with Salt, not only as a manure, but also to try its effects upon a lot of ground, which had, the preceding years, been so overrun and infested with those destructive vermin, the ground-mice, and grub-worm, that my corn plants, when young, were cut up, forcing me to plant them a second, and even a third time; and in the fall, when taking up my potatoes, beets, and parsnips, I found them to be nearly half devoured; but I have had the happiness to find, that the Salt so completely annihilated them, that not one of either kind, has since been discovered in or about the lot, since it was strewed thereon. The quantity which I used, was about at the rate of four bushels to the acre. It was strewed over the ground in the month of March, and laid upon the surface of the earth a week or ten days previously to its being ploughed and harrowed. In the month of April, I planted about one-third of this plat with Indian corn, one-third with potatoes, and the other third with beans, peas, cabbages, onions, and a variety of tap-roots, all of which succeeded remarkably well, considering the unfavourable season as respected rain. My corn exceeded, perhaps, any other in the township.

I coincide fully with Mr. Parkes in the opinion, that a great portion of the land in our country, might, by the proper use of Salt, be made to produce nearly double the amount it now does, besides bringing our crops to maturity much sooner, which would be a matter of vast importance, particularly in our middle, northern, and eastern States, in which the early frosts are very apt to do much mischief.*

I also think highly of the opinion of the celebrated Dr. Darwin on Salt, as a manure, his sentiments upon this subject, being both natural and philosophical; he observes, that, "as it is a stimulus which excites the vegetable absorbent vessels into a greater action than usual, it may, in a certain quantity, increase their growth, by enabling them to take up more nourishment in a given time, and perform their circulations and secretions with greater energy." I have no doubt but Salt would prove an excellent manure for grass lands; but, that the quantity proposed by Mr. Parke, would be far too much for any soil in our middle States, unless on very hard clay. From past experience

* It answers remarkably well in this State, and no doubt will throughout the Union.—*Edit. So. Agriculturist.*

and observations, I will venture to say, that six bushels per acre would prove an abundant dressing, for most of the grass lands in this part of the country, and the good effects of this, or even a smaller quantity, on our common pasture lands, would be seen for several succeeding years. The grass of meadow lands, would be greatly sweetened and improved, with only two or three bushels per acre, so that grazing cattle would feed and fatten thereon with avidity.

"The safest way for a farmer," says Mr. Parkes, "is to proceed to use his salt sparingly at first, and in all cases to leave a small portion of the same land without Salt, so that the real effects produced by the Salt, may be, by comparison, in every instance, self-evident and palpable."

Salt also, mixed with common barn-manure, will greatly sweeten the grass, and make it grow and shoot much faster than any other manure whatever. In making compost, if a bushel of Salt was strewed between every foot layer, it would create fermentation, and add double strength and treble value thereto, as a manure for any kind of soil. So, in like manner, if the farmer would haul a quantity of sand, loam, or earth from ditches, or mud from creeks or brooks, into his barn yard, and mix it well up with the manure, and throw on half a bushel of Salt to every load, it would ferment, invigorate, and strengthen, and thereby enhance the richness and value of his manure, and it would be the cheapest way of dressing land that could possibly be devised. Cattle fed only upon light, dry straw and corn fodder, without any thing else for their sustenance, will yield but a poor and light manure, very little better than loam itself, unless it be well salted. Whilst cows and oxen feeding on good hay, assisted by a mess of corn, two or three times a-week, and a gill of salt to each creature every third morning, will produce manure of the best kind; and, by adding half a bushel of Salt to every wagon load, before or after hauling it into the field, it would richly manure a third more land, besides destroying all kinds of grubs, moles, and other vermin with which the ground may be infested.

I have not the smallest doubt remaining upon my mind, but that the mixing of Salt with ashes, lime or plaister, it would increase the fertilizing qualities of each nearly double, and, that this kind of manure would be congenial with any soil. Salt and ashes applied to a stiff clayey soil, will destroy all

its adhesive qualities, and render it as easy of cultivation, and as productive as the richest loam.

I now, Sir, shall conclude these remarks, in the strong and appropriate language of the excellent Hollinshead.

"Agriculture," says he, "is the most certain source of domestic riches. Where it is neglected, whatever wealth may be imported from abroad, poverty and misery will abound at home. Such is, and ever will be, the fluctuating state of trade and manufactures, that thousands of people may be in employment to-day, and in beggary to-morrow. But this can never happen to those who cultivate the ground. They can eat the fruits of their own labour, and can always, by industry, obtain, at least, the necessaries of life. I am, Sir, your's, &c.

CHARLES PEIRCE."

"*Mr. Mathew Carey.*"

[I have long been convinced, both from experience and reading, that Salt is a most valuable manure. It requires, however, attentive practice to know the quantity proper for an acre, and the kind of soil with which it is most congenial. In a note, (page 177, of our 2nd volume,) I gave an unfavourable account of my experiments with *Salt*. But since the receipt of Mr. Parkes' pamphlet, which, at my request, was published by Mr. Carey, and an extensive distribution of it made by the Society, I have had every satisfactory reason to alter my opinion. My rule has ever been, never to abandon an experiment because a few failures occur. I have frequently profited by perseverance. I have repeatedly spread Salt on grass grounds in a variety of modes and quantities, and often on winter grain. Most wonderful effects have sometimes appeared, and often none at all. I cannot yet arrive at the exact quantity required. I have had strips of grass lands marked out, and measured quantities of Salt strewed; sometimes the least quantity produced the greatest effect. My mowers, when they arrived at some of the salted strips, would exclaim, "here comes the Salt!" And when the field was finished, the salted stripes could be perceived, at any reasonable distance, by their deep verdure. The English books are inadequate guides, as they only show the quantities of foul Salt used. I relate the following experiment, not for the eligibility of the rotation, but as a trial of the efficacy of Salt. Four years ago I strewed

thirteen bushels of pure coarse Salt, on an acre and twenty seven perches of ground, in the fall, and ploughed it in. The next spring I planted potatoes, lightly dunged, in the usual way. I had a miserable crop; but it was clean, and free from weeds. After gathering the potatoes, I sowed wheat, well furrowed. On the grain I sowed clover and orchard grass. My wheat, at harvest, was scarcely worth reaping, and the grass looked very unpromising; but, to my utter surprise, as the next spring advanced, a most luxuriant crop of *clover* appeared, which grew so high and strong, that I cut more than four tons:—it was coarse, and not relished by my cattle; much had been layed. In the fall, I ploughed it in, and the last spring, I again planted *potatoes*. I gathered one of the most plentiful crops I had ever experienced. After the potatoes, I sowed rye, which now promises an abundant crop. I manured, in every instance, very slightly, with dung of an inferior quality. I have given this detail to show, that an over quantity of Salt is temporarily injurious, but ultimately, salutary and effective. When, therefore, I perceive objections to salting, (as I often do, as well here as in England,) I am satisfied that there has been error, either in the quantity or quality of the *Salt*, in the nature of the soil, or the mode of application. On grass grounds, I have known an intermission of effect during one or two years, and thereafter a luxuriant produce; no doubt owing to the improper quantity used. My farms are chiefly composed of a kindly loam, well adapted to every species of manure. I have clay fields, but I do not recollect any experiments with Salt, on such fields. R. P.

May, 1825.]

ART. III.—*On the Use and Abuse of watering Vegetables in dry Seasons, and on the Advantages of Shade to Culinary Crops, in Times of great Drought; by Mr. GEORGE FULTON, Gardener to Lord Northwick, at Northwick Park, Gloucestershire.*

“Northwick Park, near Moreton in the Marsh, August 15, 1826.

Sir,—As a reader of your very useful Magazine, may I beg to be allowed to offer a few remarks on the watering of vegetables, as applying more particularly to last year, and

the present dry season. Such seasons, I believe, have prevented a number of gardeners from raising any thing near the variety of vegetables, usually in demand by the cook of a considerable family. The scorching suns of the longest days of the year, want of rain, and almost no dew in the night, are, no doubt, the principal causes of the failures that have generally taken place in the vegetable kingdom; but there are other causes, under particular circumstances, which I think ought to be noticed. One is the carrying to an injudicious extent, the watering of vegetables in very dry weather. How often do we see water thrown upon plants in the open air, as it were at random, and frequently the earth washed away from their best roots? How compressed the earth becomes after repeated watering is well known, particularly in stiff or clayey soils. It seems against the economy of nature, to water plants at all, in a clear atmosphere, and dry state of the air. Vegetables, instead of being refreshed, in the night become chilled, and actually scalded, as it were, in the day. The sickly appearance of plants, under such treatment, is soon visible, and the decay and death of many, is the consequence.

Water is used too freely in dry seasons upon the stem of the plant, both by young gardeners and cottagers in their gardens:—the former pours it on them without any other thought, than what is necessary for the performance of the operation; while the latter thinks, that, in watering so much, he is doing great things, although his cabbages are in the last stage of consumption before his eyes. All this is wrong; a variation in this, as in many other points of gardening, is better than uniformity of treatment. I have found that in the evenings, sprinkling low-growing vegetables over their leaves, and alternately watering their roots, is a good method if the surrounding air be in a moist state; but, if the drought increases with much sunshine, it was better to withhold water for a time; then again to vary the system, by watering between the rows of vegetables, alleys, &c., which tends, in some degree, to produce a moist air and dew. This, however, should only be done in calm evenings, in order, that atmospheric dews, and all exhalations from the earth, water, and vegetation may be promoted. Watering, when clouds intervene, is attended with good effects, and also when it actually rains:—vegetation is, in the latter case, accelerated in a great degree.

Different kinds of shade have been used by gardeners in hot summers to protect vegetables, and I believe not without success. The practice of growing vegetables between beds of asparagus is, I think, a good one. I have, last year and the present, had cabbages, cauliflowers, dwarf peas of the Spanish sort;—spinage, French beans, and lettuces, between asparagus beds, for a great part of both seasons, when they were scanty crops every where else in the garden. Therefore I consider that the above useful vegetable is not cultivated to the extent it ought to be, as, independent of its own use, it is also an excellent protection for vegetables in dry weather.

If, Sir, you think the above hints worthy of a place in the next number of the *Gardener's Magazine*, I shall be glad of having, in some degree, contributed towards a work, which seems to have for its chief object, the improvement of gardening, and the advancement of gardeners. I am, Sir, &c,

GEORGE FULTON.

Northwick Park, 1826.

[*Gardener's Magazine.*]

ART. IV.—*On Substitutes for Hay—Indian Corn, sown broadcast—on Rye stubble and sward; its product and value; by JOHN HARE POWEL, Esq. Powelton.*

“February 1, 1827.

After a Rye crop had been taken, the richest part of the field was ploughed—yellow Scotch, and white turnip seeds were sown with Bennett's trough, and were managed as before.

One acre of the same field was at the same time ploughed—four bushels of Indian corn were sown and ploughed under, with a very shallow furrow—an adjoining acre, which had not been previously ploughed, was sown with the same quantity of the same corn, which was in the same manner ploughed under with the stubble—it was all harrowed and rolled. The land had been limed five years since, and was in fine tilth. The turnips failed entirely—the corn vegetated regularly—covered the ground thickly, and put out tassels when five feet high. It was mown when in full blossom—treated exactly as hay; but from the succulence of

the stalks, it required much more time and attention, before it could be housed.

I found my cattle to-day contending for it eagerly, when portions of it were thrown before them in the midst of the *most fragrant* clover hay. The quantity was estimated at two tons per acre.

Upon another field, which, after having been fifteen years in common, was manured with oyster-shell lime, at the rate of an hundred bushels per acre; I caused six bushels of corn to be sown immediately after the sward and lime had been reversed. The land was harrowed closely, and heavily rolled—the crop was mown and managed as that of the last field—its product was estimated at two tons and an half per acre.

In another part of the same field, manure taken *fresh* from the stable, was spread upon sward which had been limed as in the last instance. About three bushels of Indian corn were sown on the dung, and were ploughed under with the sward, which was afterwards harrowed and rolled. Fewer seeds were used, as it was supposed the manure would cause most of them to vegetate vigorously.

This piece of land, although much shaded by a close row of trees on its southern boundary, produced more abundantly than the last. It was cut and managed as before. I am inclined to believe, from the results of all these experiments, that four bushels of corn in that state of soundness, in which it is usually found after having been thrashed some months, is the proper quantity, or that three bushels from selected ears, would be sufficient. It must be observed, that the latter part of the season was unusually favourable to the growth of Indian Corn. I have the honour to be, &c.

JOHN HARE POWEL.

“To the President of the Pennsylvania Agricultural Society.”

[Hints for American Husbandry.]

PART III.

MISCELLANEOUS AGRICULTURAL ITEMS.

The Agricultural Society of South-Carolina, held its annual Meetings on the 22nd and 23rd of February, when the following premiums were adjudged:—

To Mr. Singleton, for his thorough bred Stallion, *Crusader*, the Gold Medal.

To Mr. James Adger, for a brown Cow, the Silver Medal.

To Mr. Charles E. Rowand, for a crop of Sweet Potatoes, matured in an unusual way, the Silver Medal.

To Mr. James Cuthbert, for a crop of Corn, planted and matured in an unusual manner, the Silver Medal.

[We were promised the proceedings of the above Society at length, but they did not come in time: as also those of the Barnwell Agricultural Society, which, we understand, is interesting.]

Silk.—One farmer in Connecticut, estimates, that when his mulberry trees, 500 in number, shall have come to maturity, that the females of his family will annually make 300 lbs. of Silk. They made 50 lbs. last year, by about 100,000 worms, without feeling any loss of labour. Silk will be extensively produced in the United States, especially in the south.—*Amer. Far.*

By experiments made, it has been ascertained, that Silk-worms fed on the leaves of our native black mulberry trees, yield finer and stronger Silk, than that which is imported. This is certainly very encouraging to such persons as were desirous of engaging in this culture, and have hitherto been prevented by the want of (as they supposed) the proper variety of the mulberry.—*Edt. of the So. Agr.*

Weight of Hogs in North-Carolina.—Early in January, 1827, a number of farmers in the vicinity of Currituck Court-House, formed an association, and offered a premium of \$40 for the best 2½ years old hog: \$30 for the best year old pig: \$10 for the second best year old pig: \$7 for the third best year old pig: and \$3 for the fourth best year old pig:—\$10 for the best year old pig of the same farrow: \$6 for the second best year old pig of the same farrow: \$2 50cts. for the third best year old pig of the same farrow: and \$6 for the best pig eleven months old; to

be exhibited at the court-house, dead and neatly cleaned, on the 5th day of January, 1828.

The novelty and interest of such an exhibition, called together a very large collection of farmers of the county, and from some of the adjacent counties.

Twenty-five hogs and pigs were exhibited, and weighed with patent balances, by Thomas C. Ferebee, Esq. and the premiums awarded.

<i>Hogs 2½ years old.</i>		<i>lbs.</i>
Dr. W. F. Davis' hog, 2½ years old—weight,		525½
Cartwright Bell's do. 2 years old, do.		413
\$40 awarded to Dr. Wm. F. Davis.		

Year old Pigs.

Benjamin Sand's pig—weight,	355
Joseph J. Ballantine's do. do.	315
C. Bell's, do. do.	311
Lycurgus Bell's, do. do.	305
Thomas S. Sand's, do. do.	292
Tully Bell's, do. do.	290
James Sand's, do. do.	277
James P. Hughes', do. do.	271
Jeremiah Sand's, do. do.	265
John Brabble's, do. do.	226
Wallace Bray's, do. do.	210

\$30 awarded to Benjamin Sand: \$10 to Joseph J. Ballantine, second best: \$7 to Cart. Bell, third best: and \$3 to L. Bell, fourth best.

Pigs of the same farrow, year old.

Cartwright Bell's pig—weight,	258
Dr. Wm. F. Davis', do. do.	252
Thomas Etheredge's, do. do.	216
Benjamin Sands', do. do.	212
Joshua Baxler's, do. do.	205
Jeremiah Sand's, do. do.	180
Wallace Bray's do. do.	142

\$10 awarded to C. Bell: \$6 to Dr. W. F. Davis, second best: and \$2 50cts. to Thomas Etheredge, third best.

Pigs eleven months old.

Cartwright Bell's pig—weight,	271
Thomas J. Sand's, do. do.	196
Dr. Wm. F. Davis', do. do.	183
John W. Hughes', do. do.	143

\$6 awarded to C. Bell.—*Amer. Far.*

The Mammoth Ox, and Dwarf Cow.—Two animals of extraordinary size, and the antipodes to each other, in this respect,

are now exhibited at the house in Main-street, directly opposite to Johnson's Hotel, which are really prodigies in the natural world, and will repay the curiosity of the visitor. One is an Ox of wonderful dimensions, and of the surprising weight of 4000 pounds, to use round numbers. His size, is not, however, more attractive to the beholder, than the symmetrical exactness of his whole form, the just proportions of his limbs, and the beauty of his colour, which is a fine brindle. His activity will scarcely excite less surprise, when his enormous bulk is considered, while his docility and gentleness are such, that he permits himself to be handled by the by-standers, without manifesting any restlessness. His countenance, too, is uncommonly expressive and mild.

The Cow, which is only 2 feet 10 inches in height, and 4 feet 2 inches in length, forms a singular and amusing contrast to the gigantic dimensions of the Ox.

Virginia Pumpkin.—A pumpkin of unusual size, grew on the farm of John Reynolds, Esq. a few miles from Clarksburgh, Va. last season. It weighed 320 pounds, and measured round the middle 9 feet. All that grew on the same vine weighed 840 lbs.

Animal Gratitude.—On Friday afternoon, a boy of fourteen years of age, while herding cattle on the farm of Reideley's, was attacked by a bull, without the least provocation. He was repeatedly knocked down and trampled upon for a length of time, so as to be severely bruised in all parts of the body. No person being near, his cries were not heard, and fatal consequences would very soon have ensued, had he not been released in a most singular manner. While the furious animal was getting more enraged, he was attacked by the rest of the cattle (oxen), in so determined a manner, that in order to defend himself, he left the boy, who was fortunately still able to remove, and who was thus enabled to escape. Such an example of the exertion of a degree of intellect in cattle, led to an inquiry of the boy regarding the circumstances of the case. The boy informed the writer of this article, that only one of the cattle came first to his rescue, and attacked the bull, and in a little time the others came, as if to the assistance of the first. This grateful and generous animal had been, during the last winter, in rather a sickly condition, during which time, the boy had paid it considerable attention, giving it handfuls of corn, and otherwise administering to its comforts; which attention, it has so nobly repaid, by rescuing its benefactor from a violent and shocking death.—*Life Herald.*

Valuable Discovery.—One of the most valuable discoveries in Agriculture, is to mix layers of grown or new cut clover, with

layers of straw in ricks or stacks; thus the strength of the clover is absorbed by the straw, which, thus impregnated, both horses and cattle eat greedily, and the clover is dried and preserved from heating. This practice is particularly calculated for second crops of clover and rye-grass.

EUROPE.

Swiss Dairies.—"This work, (Bemerkungen auf Einer Alpenreise, &c. by C. Kasthofer,) consists of observations made during excursions in the Alps, some of which are interesting, as they respect the Swiss dairies. These are constructed in places abounding with spring-water, and banks are formed in them, in which the vessels float that contain the milk. In this situation the milk remains five days; it is then creamed, and the eurd pressed till it is completely dry. Next it is reduced to powder, and mixed with a certain quantity of salt, and the powdered leaves of *Trifolium melilotus cærulea*. After this the mass is put into form, and being powerfully pressed, is the celebrated Gruyère cheese.—*Gardener's Magazine*.

Sun Flower.—In Portugal, they eat the young shoots of this plant, "seasoned with oil and salt; bread is made of the seeds, and also a sort of groats, that a useful and edible oil may be expressed from them, and that they are good for fattening poultry. The leaves of the plant form an excellent forage, especially for cows and sheep. The stems will do for props for twining or climbing plants; afterwards they make good fuel, and their ashes afford potash. In some parts of America they roast the seeds, and use them as coffee."—*Ibid*.

VALUABLE RECEIPTS.

Tomata Sauce for Cold Meat.—Boil tomatas when ripe; rub them through a tamy cloth; to every quart of pulp add $\frac{1}{2}$ ounce of garlic, and 1 ounce of shallots, salt to taste: boil half an hour, strain out the garlic; add to every quart, half a pint of common vinegar, and a wine glass full of Chili, do.; let it stand a day or two before corking.—*Ibid*.

Potted Tomatas.—Reduce your tomatas over the fire, till they are quite thick, stirring all the time to keep them from burning; rub them through a tamy, put them again into your stew-pan, with an equal quantity of glaze, and reduce again over a sharp fire, till you think the whole will be quite firm, when cold, (or like glaze;) put them into a white earthen pot; when cold, cover them with writing-paper dipped in brandy; pour over some warm hogs lard, and cover all over with a bladder tied quite tight; a small piece added to a little gravy or melted butter, will make an excellent sauce for cutlets or chops.—*Ibid*.

AGRICULTURAL WORKS.

AN ADDRESS, delivered at the first Anniversary Meeting of the United Agricultural Society of South-Carolina, in the Hall of the House of Representatives, at Columbia, on Thursday, 5th Dec. 1827. By Whitemarsh B. Seabrook, President. Price 25 cents. Charleston.

A Memoir on the CULTIVATION of the VINE, in America, and the best Mode of making Wine. By John Adlum. Washington.

An Essay on the HISTORY and CULTIVATION of the European Olive Tree. Paris.

A LETTER to the FARMERS and GRAZIERS of Great Britain, to explain the advantages of using **SALT** in the various branches of Agriculture, and in feeding all kinds of Farming Stock. By Samuel Parkes, F. L. S.

GLEANINGS from the most celebrated books on HUSBANDRY, GARDENING, and RURAL AFFAIRS. From the second London edition, interspersed with remarks and Observations. By a Gentleman of Philadelphia.

A NEW SYSTEM of CULTIVATION, without **LIME**, or **DUNG**, or **SUMMER FALLOWS**; as practised at Knowle-Farm, in the County of Sussex. By Major-General Alexander Beatson, late Governor of the Island of St. Helena, and Honorary Member of the Board of Agriculture. Illustrated by three Engravings. Philadelphia.

AMERICAN HUSBANDRY, Containing an Account of the Soil, Climate, Productions, and Agriculture of the British Colonies, in North America and the West Indies, 2 vols.

MEMOIRS of the PHILADELPHIA SOCIETY, for PROMOTING AGRICULTURE, Containing communications on various subjects in Husbandry and Rural Affairs, 5 vols.

ERRATA IN No. 2, FOR FEBRUARY.

Page 61, line 7—for "*corn stands in relation to wheat*," read "*corn stands in relation to sweets*."

" " " for "*one pound of wheat*," read "*one pound of sweets*."
